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Title: Sampling and analysis plan for assessment of beryllium in soils surrounding TA-40 building 15

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Sampling and analysis plan

for assessment of beryllium in soils surrounding TA-40 building 15

December 2016 - Final

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1.0 Overview

Technical Area (TA) 40 Building 15 (40-15) is an active firing site at Los Alamos National Laboratory. The weapons facility operations (WFO) group plans to build an enclosure over the site in 2017, so that test shots may be conducted year-round. The enclosure project is described in PRID 16P-0209.

40-15 is listed on LANL OSH-ISH's beryllium inventory, which reflects the potential for beryllium in/on soils and building surfaces at 40-15. Some areas in and around 40-15 have previously been sampled for beryllium, but past sampling efforts did not achieve complete spatial coverage of the area.

This Sampling and Analysis Plan (SAP) investigates the area surrounding 40-15 via 9 deep (≥1-ft.) soil samples and 11 shallow (6-in.) soil samples. These samples will fill the spatial data gaps for beryllium at 40-15, and will be used to support OSH-ISH's final determination of 40-15's beryllium registry status.

This SAP has been prepared by the Environmental Health Physics program in consultation with the Industrial Hygiene program. Industrial Hygiene is the owner of LANL's beryllium program, and will make a final determination with regard to the regulatory status of beryllium at 40-15.

2.0 Background for 40-15

2.1 Site location

40-15 is located at TA-40 on the northern rim of Pajarito Canyon, at the east end of TD Site road. Access is restricted to Q-cleared Laboratory personnel and escorted, uncleared personnel.

Figure 1. Aerial view of 40-15 and the surrounding features.

2.2 Description of 40-15

40-15 is a one-story rectangular-in-plan building measuring 16-ft by 37-ft 6-in. with a 16-ft concrete apron. The building was built in 1950 with a reinforced concrete foundation, a 2-ft-thick reinforced concrete floor slab, 1-ft-thick reinforced concrete walls, and a 1-ft-thick flat reinforced concrete roof covered with tar and gravel.

Since its construction, this building has continuously served as a firing point facility, with the bulk of the work centered on the physics of detonation and detonator testing.

Due to the explosives testing that has occurred at this site, 40-15 is associated with solid waste management unit (SWMU) 40-006(a). Tests conducted at this site have included detonator booster tests, which use 2-lb of explosives, and large open-air shots, which can use up to 50-lb of explosives. After each shot, large pieces of debris are removed and disposed of off-site; the open area is graded, and the sand and debris are pushed to the edge of the canyon, creating a sand berm near the mesa edge.

3.0 Data Quality Objectives

3.1 Objective of the SAP

The objective of this SAP is to fill spatial data gaps in soil samples analyzed for beryllium at 40-15. Previous sampling was conducted in 1995 near the firing point pad and to the south of the building

along the berm. This SAP will collect samples 1) to analyze current environmental concentrations of beryllium and 2) to compliment previous characterization at 40-15. This SAP requires:

1. Shallow samples (6-in.) to the north of 40-15, behind the building, AND
2. Along the earthen berm south of 40-15. This berm was constructed by scraping soils near the building to the south; the berm serves as an integrator of soil beryllium at 40-15. To more completely capture soil concentrations of beryllium, deep samples (≥1-ft.) will be taken from the berm. The actual depth of the deep samples will be determined by the depth of the berm – samples should be deep enough to be representative of the depth profile of the berm.

Figure 2: Map showing location of existing sampling points (blue squares) and proposed shallow (yellow circles) and deep (green triangle) 40-15 sampling locations.

3.2 Derivation of a beryllium action level

The action level is the concentration of beryllium in soil above which the characterized site will be subject to increased regulatory oversight. Sites with soil beryllium concentrations below the action level will be candidates for reduced oversight, including removal from LANL's beryllium inventory and unrestricted use by personnel.

Here, the relevant action level question is: do soil concentrations exceed the regional statistical reference level (RSRL) – i.e., is the beryllium in soils distinguishable from naturally occurring

beryllium? Ryti et al (1998) determined that the RSRL for beryllium in soils on the Pajarito Plateau is 1.8 mg/kg.

3.3 Decision identification

The principle study question is: Is there beryllium that exceeds the beryllium soil action level (i.e., the RSRL) in the soils surrounding 40-15? The decision alternatives are:

- If results from the beryllium soil measurements are equal to or above 1.8 mg/kg, then construction work must proceed as a beryllium job, and the site is not a candidate for reduced oversight, including removal from the beryllium inventory.
- If results from the soil beryllium measurements are below 1.8 mg/kg, then construction work may proceed without being classified as a beryllium job, and the site is a candidate for reduced oversight, including removal from the beryllium inventory.

3.4 Study boundaries

This sampling program is in support of construction work (as described in PRID 16P-0209) immediately around 40-15, with additional samples to be taken at an earthen berm south of the building. The berm itself will be evaluated as a separate decision unit from the area around the building. In the event that beryllium concentrations in the berm, but not around 40-15, exceed this plan's decision criteria (1.8 mg/kg), the berm may be subject to work restrictions that do not apply to the rest of the study area.

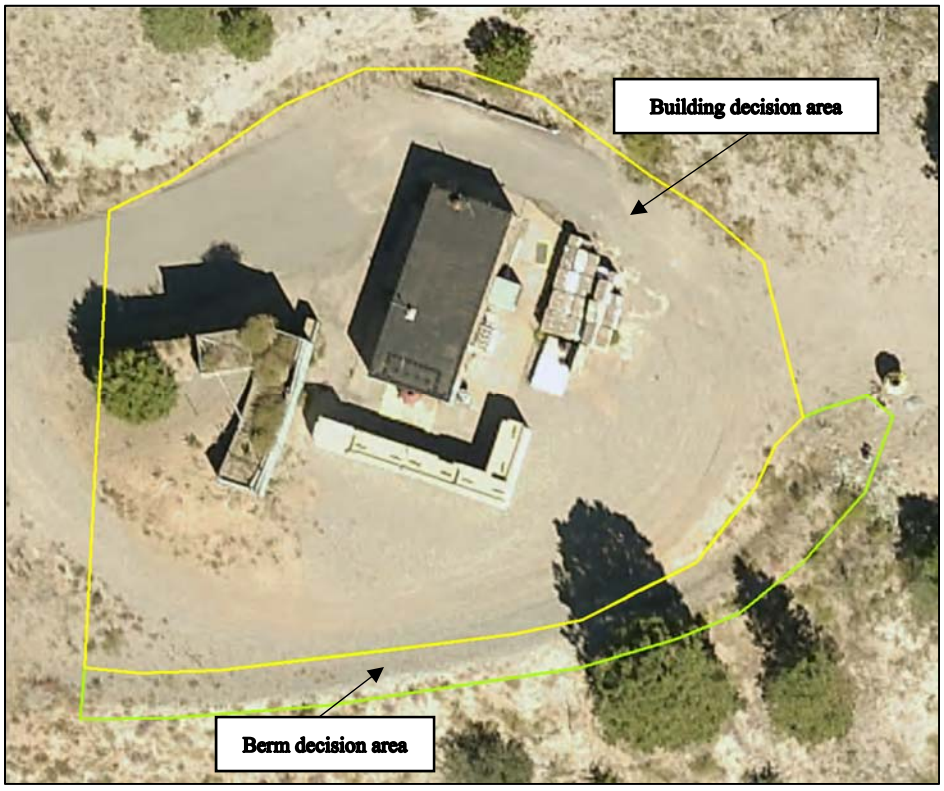

Figure 3: Map showing decision areas: building (yellow outline) and berm (green outline).

Beryllium is the analyte of interest.

3.5 Evaluation for number of samples required

The number of samples has been determined via the professional judgement of the involved subject matter experts from Industrial Hygiene. Nine (9) deep (≥1-ft.) samples, and eleven (11) shallow (6-in.) samples will be collected under this SAP. Samples will be split between EPC-ES and OSH-ISH.

These samples complement existing sampling, whose results are presented as attachment 2 to this document.

3.6 Decision rule

40-15 will be analyzed as a single decision area. The decision rule is based on the following:

- Null hypothesis: mean residual beryllium levels in soil/sediment in the decision area is *above* the RSRL for beryllium.
- Alternative hypothesis: mean residual beryllium levels in soil/sediment in the decision area is *below* the RSRL for beryllium.

3.7 Limits on decision errors

The distribution for the data is *not* assumed to be normal. The acceptable statistical errors for this analysis are:

- Type 1 error < 0.05 (incorrectly reject null hypothesis, i.e., conclude contamination level is less than the beryllium RSRL when in fact it is greater than the RSRL)
- Type 2 error < 0.1 (incorrectly fail to reject null hypothesis, i.e., conclude soil contamination level is greater than the beryllium RSRL when in fact it is less than the RSRL).

4.0 Measurement Quality Objectives (MQOs) and applicable procedures

4.1 MQOs

1) Detection Capability: Minimum Detection Concentration should about or less than 0.2 mg/kg in soil.
2) The degree of measurement uncertainty (combined precision and bias) should be reported and the level should be reasonable relative to the needed accuracy of the decision.
3) Range of the instrument and measurement technique should be appropriate for the concentrations expected.
4) The instrument and measurement technique should be specific for beryllium. Specificity is the ability of the measurement method to measure the analyte of interest in the presence of interferences.
5) For field instruments, the instrument should be rugged enough to consistently provide reliable measurements. However, in this case, all samples will be analyzed in the laboratory.
6) Soil samples taken by EPC-ES will be split with OSH-ISH. These split samples will be sent to a separate laboratory, and analyzed for yttrium and beryllium as part of a separate OSH-ISH project.

4.2 Procedures used to meet these MQOs

1) Collection of valid soil sample appropriate for the dose assessment,
    a. ER-SOP-20069, R0 (2015) *Soil, tuff, and sediment sampling.*
    b. QAPP-0001 (2008) *Quality and assurance project plan for the soils, foodstuffs, and non-foodstuff biota monitoring project.*
2) Soil sample analysis will use EPA-approved analytical procedures for each chemical. The following will be used by the independent laboratory:
    a. EPA Method SW-846:6020 *Inductively coupled plasma – mass spectrometry*
    b. DOE Environmental Monitoring Laboratory HASL-300

After the measurements are completed, the laboratory results will be evaluated with respect to the MQOs, as stated above.

Split samples with OSH-ISH will analyzed by an American Industrial Hygiene Association accredited laboratory.

5.0 Sampling locations

Table 1 presents a summary of the number of sample locations for 40-15. Approximate locations are indicated in Figure 3, and coordinates are provided in Table 2. Sample locations may be field re-located as needed by the sampling team.

Depth of Sample	Number of Samples	Type of placement
Shallow, 0 to 6-in.	11	Bias plus transect sampling
Deep, ≥1-ft.	9	Bias plus transect sampling

Table 1: Summary of samples to be collected.

Figure 4. General locations of the 20 samples adjacent to 40-15. Deep (≥1-ft.) samples are green triangles, and shallow (6-in.) samples are yellow circles.

#	Type of sample	Label	X Coordinate	Y Coordinate
1	Shallow	Shallow-1	1620871.522	1767128.868
2	Shallow	Shallow-2	1620882.552	1767161.588
3	Shallow	Shallow-3	1620878.759	1767149.807
4	Shallow	Shallow-4	1620886.609	1767180.591
5	Shallow	Shallow-5	1620863.299	1767188.016
6	Shallow	Shallow-6	1620870.63	1767169.405
7	Shallow	Shallow-7	1620858.129	1767169.593
8	Shallow	Shallow-8	1620854.375	1767159.159
9	Shallow	Shallow-9	1620847.038	1767136.413
10	Shallow	Shallow-10	1620875.37	1767139.623
11	Shallow	Shallow-11	1620850.149	1767148.096

12	Deep	Deep-1	1620939.975	1767126.746
13	Deep	Deep-2	1620932.422	1767109.819
14	Deep	Deep-3	1620921.225	1767097.058
15	Deep	Deep-4	1620906.902	1767088.465
16	Deep	Deep-5	1620889.975	1767083.517
17	Deep	Deep-6	1620874.61	1767080.131
18	Deep	Deep-7	1620855.339	1767078.048
19	Deep	Deep-8	1620836.849	1767075.183
20	Deep	Deep-9	1620819.141	1767073.1

Table 2: Detailed description of samples to be collected.

6.0 Attachments

Attachment 1: Review of Potential Release Sites (PRSs) adjacent to 40-15.
Attachment 2: Previous beryllium sampling data adjacent to 40-15

7.0 References

Environmental Protection Agency (EPA). Inductively coupled plasma-mass spectrometry. Method SW-846:6020A.

Intellus 2016. Web address for database access: <http://www.intellusnmdata.com/>

Los Alamos National Laboratory, 2008. *Quality and assurance project plan for the soils, foodstuffs, and non-foodstuff biota monitoring project.* LANL Quality Assurance Project Plan: QAPP-0001.

Los Alamos National Laboratory, 2015. *Soil, tuff, and sediment sampling*. LANL Procedure: ER-SOP-20069, R0.

Ryti RT, Longmire PA, Broxton DE, Reneau SL, Mcdonald EV, 1998. Inorganic and radionuclide background data for soils, canyon sediments, and Bandelier tuff at Los Alamos National Laboratory. Los Alamos National Laboratory report LA-UR-98-4847.

US Environmental Protection Agency. *Inductively coupled plasma – mass spectrometry*. EPA Method 6020A (SW-846).

Attachment 1: Review of PRSs adjacent to 40-15

Potential Release Site Website

SWMU 40-006(a)

Firing Site

Category: O-1 Firing Sites

Corrective Action Status: In Progress. Deferred per Consent Order	**RCRA Permit Status:** HSWA - Table K-1
Aggregate Area : Starmer/Upper Pajarito Canyon	**Watershed :** Pajarito
Technical Area: TA-40	**Structure Number:** 40-15
Land Transfer?: No	**Private Property?:** No
Dates of Operation: 1950s-Present	**Former Operable Unit:** OU 1111
IP Site? Yes	**Mechanical Potholing Allowed?** No
Related SMAs: PJ-SMA-10	

Overview | Records | Photographs | Maps | Data Summary

Acronyms and Definitions

Site Description

SWMU 40-006(a) is an active firing site (structure 40-15) located at TA-40 on the northern rim of Pajarito Canyon, at the east end of TD Site road. The SWMU 40-006(a) firing site consists of a reinforced concrete and steel building that allows observation of the test shots, a partially protected area on the south side of the building where shots are prepared, and an open firing pad connected to the south of the building where larger shots are fired. Since 1950, this firing site has been used to test and develop detonators. Tests conducted at this Site have included detonator booster tests, which use 2 lb of explosives, and large open-air shots, which can use up to 50 lb of explosives. After each shot, large pieces of debris are removed and disposed of off-site; the open area is graded, and the sand and debris are pushed to the edge of the canyon, creating a sand berm near the canyon edge.

Investigation Activities

In 1989, DOE investigated SWMU 40-006(a) by collecting three samples from three locations and analyzing them for HE, inorganic chemicals, and radionuclides.

An RFI was conducted at SWMU 40-006(a) in 1995. One-hundred thirteen samples were collected from 48 locations and submitted to an off-site contract analytical laboratory for analyses of metals, total cyanide, uranium, HE, SVOCs, gamma-emitting radionuclides, strontium-90, and tritium; however, not all samples were analyzed for all suites. Samples were collected at depth intervals ranging from 0 to 14.5 ft bgs.

Investigation Results

The 1995 RFI data are considered screening-level data and showed antimony, arsenic, barium, cadmium, calcium, chromium, cobalt, copper, lead, magnesium, manganese, mercury, nickel, selenium, silver, total uranium, and zinc were detected above BVs. Twenty-one organic chemicals, including PAHs, other SVOCs, and HE, were detected. Cesium-137 and strontium-90 were detected above FVs; cobalt-60 was detected.

Site Status

Investigation of SWMU 40-006(a) is deferred perTable IV-2 of the Consent Order.

NOTE: Information presented on this page was derived from previously published documents and subject matter expert knowledge. Any discussion of BVs, FVs, and SSL/SALs is taken from referenced documents and reflects the values in use at the time the documents were written. If RFI activities were conducted at this site, they are described in detail in the documents listed in the Records tab above.

Attachment 2: Previous Sampling Results

ANALYTICAL REPORT

Report Date: November 20, 2015

Michael Hopwood
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Workorder: **34-1531778**
Client Project ID: X5D100 0010 AW62/TA 40-15
Purchase Order: X5D100 0010AW62
Project Manager: Rand Potter

Analytical Results

Sample ID: **JS4015P-A** Received: 11/13/2015
Lab ID: 1531778001 Sampling Location: TA 40-15

Method: NIOSH 7300 Mod. **Media:** MCE Filter **Prepared:** 11/17/2015
Sampling Parameter: Air Volume 241.644 L **Analyzed:** 11/18/2015

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Beryllium	**(0.0041)**	**(0.000017)**	0.0038	0.013
Uranium	<0.75	<0.0031	0.75	2.5

Sample ID: **MH110915-01** Received: 11/13/2015
Lab ID: 1531778002 Sampling Location: TA 40-15

Method: NIOSH 7300 Mod. **Media:** MCE Filter **Prepared:** 11/17/2015
Sampling Parameter: Air Volume 484.932 L **Analyzed:** 11/18/2015

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Beryllium	<0.0038	<0.0000077	0.0038	0.013
Uranium	<0.75	<0.0015	0.75	2.5

Sample ID: **MH110915-02** Received: 11/13/2015
Lab ID: 1531778003 Sampling Location: TA 40-15

Method: NIOSH 7300 Mod. **Media:** MCE Filter **Prepared:** 11/17/2015
Sampling Parameter: Air Volume 481.39 L **Analyzed:** 11/18/2015

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Beryllium	<0.0038	<0.0000078	0.0038	0.013
Uranium	<0.75	<0.0016	0.75	2.5

ANALYTICAL REPORT

Workorder: **34-1531778**
Client Project ID: X5D100 0010 AW62/TA 40-15
Purchase Order: X5D100 0010AW62
Project Manager: Rand Potter

Analytical Results

Sample ID: **MH110915-03** Received: 11/13/2015
Lab ID: 1531778004 Sampling Location: TA 40-15

Method: NIOSH 7300 Mod. **Media:** MCE Filter **Prepared:** 11/17/2015
Sampling Parameter: Air Volume 364.338 L **Analyzed:** 11/18/2015

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Beryllium	<0.0038	<0.000010	0.0038	0.013
Uranium	<0.75	<0.0021	0.75	2.5

Sample ID: **MH110915-06** Received: 11/13/2015
Lab ID: 1531778005 Sampling Location: TA 40-15

Method: NIOSH 7300 Mod. **Media:** MCE Filter **Prepared:** 11/17/2015
Sampling Parameter: Air Volume Not Provided **Analyzed:** 11/18/2015

Analyte	Result (ug/sample)	Result (mg/m³)	LOD (ug/sample)	RL (ug/sample)
Beryllium	<0.0038	NA	0.0038	0.013
Uranium	<0.75	NA	0.75	2.5

Sample ID: **JSSI4015-A** Received: 11/13/2015
Lab ID: 1531778006 Sampling Location: TA 40-15

Method: NIOSH 7500 Mod. **Media:** PVC Filter **Analyzed:** 11/19/2015
Sampling Parameter: Air Volume 327.834 L

Analyte	Result (mg/sample)	Result (ug/m³)	LOD (mg/sample)	RL (mg/sample)
Quartz	**(0.013)**	**(40)**	0.010	0.030
Cristobalite	<0.020	<61	0.020	0.030
Tridymite	<0.020	<61	0.020	0.030

Sample ID: **JSSI4015-B** Received: 11/13/2015
Lab ID: 1531778007 Sampling Location: TA 40-15

Method: NIOSH 7500 Mod. **Media:** PVC Filter **Analyzed:** 11/19/2015
Sampling Parameter: Air Volume 268.396 L

Analyte	Result (mg/sample)	Result (ug/m³)	LOD (mg/sample)	RL (mg/sample)
Quartz	<0.010	<37	0.010	0.030
Cristobalite	<0.020	<75	0.020	0.030
Tridymite	<0.020	<75	0.020	0.030

ANALYTICAL REPORT

Workorder: 34-1531778
Client Project ID: X5D100 0010 AW62/TA 40-15
Purchase Order: X5D100 0010AW62
Project Manager: Rand Potter

Analytical Results

Sample ID: MH110915-04 — Received: 11/13/2015
Lab ID: 1531778008 — Sampling Location: TA 40-15
Method: NIOSH 7500 Mod. — **Media:** PVC Filter — **Analyzed:** 11/19/2015
Sampling Parameter: Air Volume 635.467 L

Analyte	Result (mg/sample)	Result (ug/m³)	LOD (mg/sample)	RL (mg/sample)
Quartz	**(0.016)**	**(25)**	0.010	0.030
Cristobalite	<0.020	<31	0.020	0.030
Tridymite	<0.020	<31	0.020	0.030

Sample ID: MH110915-05 — Received: 11/13/2015
Lab ID: 1531778009 — Sampling Location: TA 40-15
Method: NIOSH 7500 Mod. — **Media:** PVC Filter — **Analyzed:** 11/19/2015
Sampling Parameter: Air Volume 695.475 L

Analyte	Result (mg/sample)	Result (ug/m³)	LOD (mg/sample)	RL (mg/sample)
Quartz	**0.036**	**51**	0.010	0.030
Cristobalite	<0.020	<29	0.020	0.030
Tridymite	<0.020	<29	0.020	0.030

Sample ID: MH110915-07 — Received: 11/13/2015
Lab ID: 1531778010 — Sampling Location: TA 40-15
Method: NIOSH 7500 Mod. — **Media:** PVC Filter — **Analyzed:** 11/19/2015
Sampling Parameter: Air Volume Not Provided

Analyte	Result (mg/sample)	Result (ug/m³)	LOD (mg/sample)	RL (mg/sample)
Quartz	<0.010	NA	0.010	0.030
Cristobalite	<0.020	NA	0.020	0.030
Tridymite	<0.020	NA	0.020	0.030

Comments

Quality Control: NIOSH 7300 Mod., Prep - (HBN: 159625)

The zinc recovery for MCE LCS 476249 is high outside current LCS limits but within +/- 20% so the data is reported as is without further comment.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 7300 Mod.	/S/ Peter P. Steen 11/18/2015 12:32	/S/ Penny A. Foote 11/18/2015 14:23
NIOSH 7500 Mod.	/S/ Paul M. Megerdichian 11/20/2015 11:11	/S/ Jeff Ward 11/20/2015 16:21

ANALYTICAL REPORT

Workorder: **34-1531778**
Client Project ID: X5D100 0010 AW62/TA 40-15
Purchase Order: X5D100 0010AW62
Project Manager: Rand Pcttter

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ACLASS (DoD ELAP)	ADE-1420	http://www.aclasscorp.com
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Florida (TNI)	E871067	http://www.dep.state.fl.us/labs/bars/sas/qa/
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:			
CPSC	ACLASS (ISO 17025, CPSC)	ADE-1420	http://www.aclasscorp.com
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
ND = Not Detected, Testing result not detected above the LOD or LOQ.
NA = Not Applicable.
** No result could be reported, see sample comments for details.
< This testing result is less than the numerical value.
( ) This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

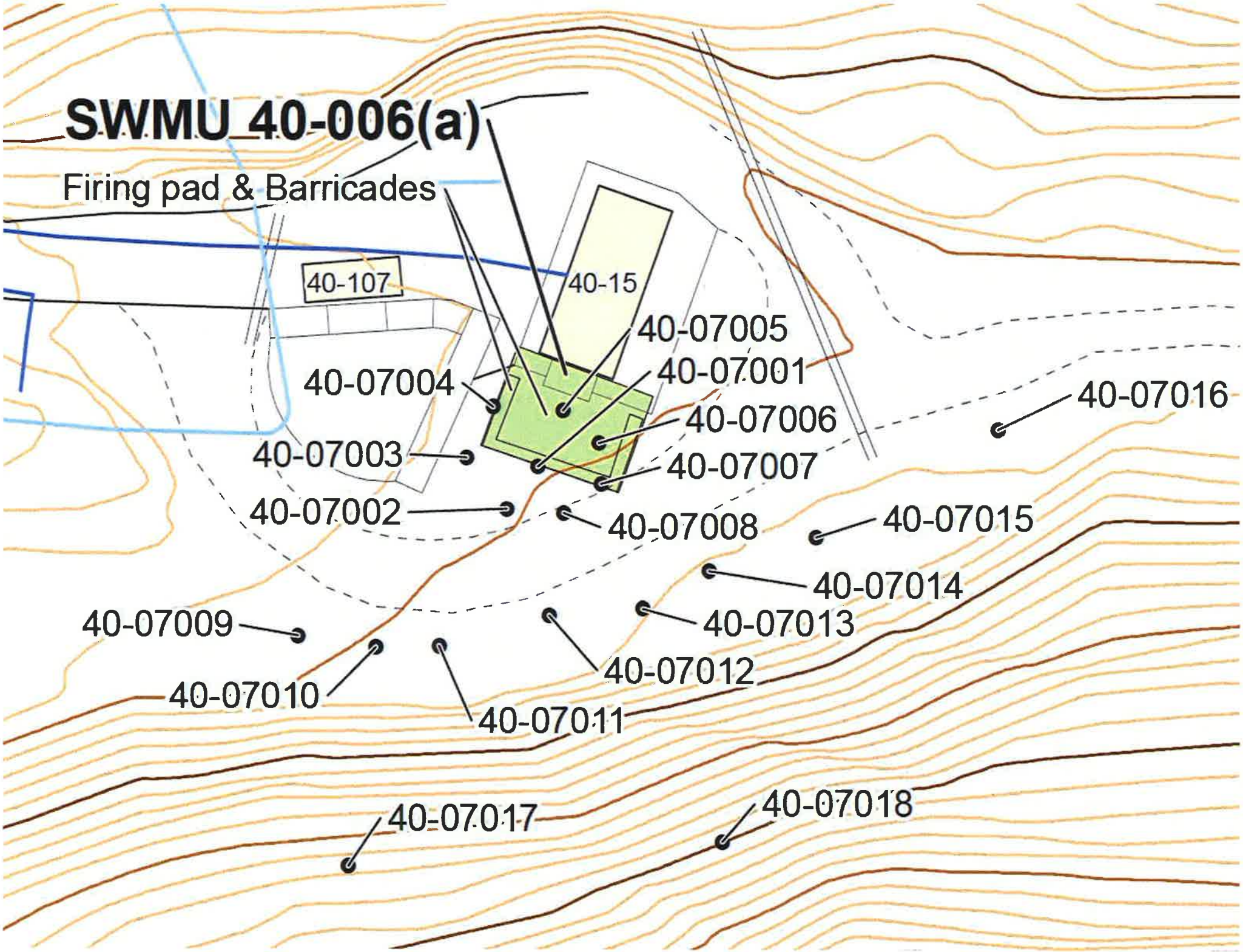
SWMU 40-006(a)
Firing pad & Barricades
40-107
40-15
40-07005
40-07001
40-07004
40-07016
40-07006
40-07003
40-07007
40-07002
40-07008
40-07015
40-07014
40-07009
40-07013
40-07012
40-07010
40-07011
40-07017
40-07018

Table 7.5-2
Inorganic Chemicals above BVs at SWMU 40-006(a)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Magnesium	Manganese	Mercury	Nickel	Selenium	Silver	Sodium	Thallium	Uranium	Zinc
Qbt 2, 3, 4 Background Value[a]				**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**na[b]**	**11.2**	**1690**	**482**	**0.1**	**6.58**	**0.3**	**1**	**2770**	**1.1**	**2.4**	**63.5**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**2370**	**543**	**0.1**	**9.38**	**0.3**	**1**	**1470**	**0.73**	**2.22**	**60.2**
Soil Background Value[a]				**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**4610**	**671**	**0.1**	**15.4**	**1.52**	**1**	**915**	**0.73**	**1.82**	**48.8**
Construction Worker SSL[c]				**124**	**65.4**	**4350**	**144**	**309**	**na**	**449[d]**	**34.6[e]**	**12,400**	**6190**	**800**	**na**	**463**	**92.9[c]**	**6190**	**1550**	**1550**	**na**	**20.4**	**929**	**92,900**
Industrial SSL[c]				**454**	**17.7**	**224,000**	**2260**	**1120**	**na**	**2920[d]**	**300[f]**	**45,400**	**22,700**	**800**	**na**	**145,000**	**310[f]**	**22,700**	**5680**	**5680**	**na**	**74.9**	**3410**	**341,000**
Residential SSL[c]				**31.3**	**3.9**	**15,600**	**156**	**77.9**	**na**	**219[d]**	**23[f]**	**3130**	**1560**	**400**	**na**	**10,700**	**23[f]**	**1560**	**391**	**391**	**na**	**5.16**	**235**	**23,500**
0540-95-1000	40-07001	0–0.5	SOIL	—[g]	—	—	—	1 (U)	—	—	10 (U)	41 (J+)	NA[h]	—	—	—	—	—	—	2.1 (U)	1000 (U)	2.1 (UJ)	2.3	160
0540-95-1002	40-07001	6.75–7.75	QBT3	—	—	48 (U)	—	—	—	—	12 (U)	6 (U)	NA	—	—	—	0.12 (U)	9.6 (U)	1.2 (U)	2.4 (U)	—	2.4 (UJ)	5.3	—
0540-95-1001	40-07001	13.5–14.5	QBT3	—	—	—	—	—	—	—	11 (U)	5.4 (U)	NA	—	—	—	0.11 (U)	8.7 (U)	1.1 (U)	2.2 (U)	—	2.2 (UJ)	3.2	—
0540-95-1003	40-07002	0–0.5	SOIL	—	—	—	—	1 (U)	—	—	10 (U)	42 (J+)	NA	—	—	—	—	—	—	2 (U)	1000 (U)	2 (UJ)	2	—
0540-95-1005	40-07002	2–3	SOIL	—	—	—	—	1 (U)	—	—	10 (U)	—	NA	—	—	—	—	—	—	2.1 (U)	1000 (U)	2.1 (UJ)	4	—
0540-95-1004	40-07002	4–5	QBT3	—	—	51 (U)	1.3 (U)	—	—	—	13 (U)	6.4 (U)	NA	—	—	—	0.13 (U)	10 (U)	1.3 (U)	2.6 (U)	—	2.6 (UJ)	3.6	—
0540-95-1006	40-07003	0–0.5	SOIL	—	—	—	—	1.3 (U)	—	—	13 (U)	100 (J+)	NA	—	—	—	0.13 (U)	—	—	2.5 (U)	1300 (U)	2.5 (UJ)	NA	81
0540-95-1007	40-07003	0.5–1.5	QBT3	—	—	330	1.3 (U)	—	19000	—	13 (U)	13 (J+)	NA	—	2200	—	0.13 (U)	10 (U)	1.3 (U)	2.5 (U)	—	2.5 (UJ)	3.2	—
0540-95-1008	40-07003	2.5–3.5	QBT3	—	—	52 (U)	1.3 (U)	—	2300	—	13 (U)	6.5 (U)	NA	—	—	—	0.13 (U)	10 (U)	1.3 (U)	2.6 (U)	—	2.6 (UJ)	3.3	—
0540-95-1009	40-07004	0–0.5	SOIL	—	—	—	—	1 (U)	—	—	10 (U)	72 (J+)	NA	—	—	—	—	—	—	2 (U)	1000 (U)	2 (UJ)	1.9	—
0540-95-1012	40-07004	1.75–2.75	QBT3	—	—	140	—	—	—	—	12 (U)	6 (U)	NA	—	—	—	0.12 (U)	9.6 (U)	1.2 (U)	2.4 (U)	—	2.4 (UJ)	5.4	—
0540-95-1011	40-07004	3.5–4.5	QBT3	—	3.3	50 (U)	1.3 (U)	—	—	—	13 (U)	6.3 (U)	NA	—	—	—	0.13 (U)	10 (U)	1.3	2.5 (U)	—	2.5 (UJ)	4	—
0540-95-1013	40-07005	0–0.5	SOIL	4.5 (U)	—	—	—	0.68 (U)	—	—	—	72.2 (J-)	NA	—	—	—	—	—	—	1.5 (U)	—	1.2 (U)	—	—
0540-95-1015	40-07005	2–3	QBT3	4.7 (U)	—	201	—	—	4290	—	—	41.8 (J-)	NA	—	—	—	—	—	0.94 (U)	1.6 (U)	—	1.3 (U)	—	—
0540-95-1014	40-07005	4–5	QBT3	4.6 (U)	—	198	—	—	—	—	—	5.8 (J-)	NA	—	—	—	—	—	0.93 (U)	1.5 (U)	—	1.3 (U)	—	—
0540-95-1016	40-07006	0–0.5	SOIL	4.4 (U)	—	—	—	0.66 (U)	—	—	—	106 (J-)	NA	—	—	—	—	—	—	1.5 (U)	—	1.2 (U)	—	—
0540-95-1018	40-07006	1.5–2.5	QBT3	4.5 (U)	—	218	—	—	4100	—	—	295 (J-)	NA	—	—	—	—	—	0.91 (U)	1.5 (U)	—	1.2 (U)	—	—
0540-95-1017	40-07006	3–4	QBT3	4.4 (U)	—	137	—	—	—	—	—	12.2 (J-)	NA	—	—	—	—	—	0.88 (U)	1.5 (U)	—	1.2 (U)	—	—
0540-95-1019	40-07007	0–0.5	SOIL	4.6 (U)	—	—	—	0.69 (U)	—	—	—	69.8 (J-)	NA	—	—	—	—	—	—	1.5 (U)	—	1.3 (U)	—	—
0540-95-1021	40-07007	1.65–2.65	QBT3	4.3 (U)	—	204	—	—	3510	—	—	34.7 (J-)	NA	—	—	—	—	—	0.87 (U)	1.4 (U)	—	1.2 (U)	—	—
0540-95-1020	40-07007	3.3–4.3	QBT3	4.5 (U)	—	—	—	—	—	—	—	—	NA	—	—	—	—	—	0.9 (U)	1.5 (U)	—	1.2 (U)	—	—
0540-95-1022	40-07008	0–0.5	SOIL	4.5 (U)	—	—	—	0.67 (U)	6790	—	—	100 (J-)	NA	—	—	—	—	—	—	1.5 (U)	—	1.2 (U)	—	—
0540-95-1025	40-07008	1.95–2.95	QBT3	4.6 (U)	—	241	—	—	3870	—	—	59.7 (J-)	NA	13.6	—	—	—	—	0.92 (U)	1.5 (U)	—	1.3 (U)	—	—
0540-95-1024	40-07008	3.9–4.9	QBT3	4.7 (U)	—	—	—	—	—	—	—	—	NA	—	—	—	—	—	0.94 (U)	1.6 (U)	—	1.3 (U)	—	—
0540-95-1026	40-07009	0–0.5	SOIL	6.4 (U)	—	—	—	0.85 (U)	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	—	—
0540-95-1028	40-07009	1.25–2.25	QBT3	5.9 (U)	—	751	—	—	2480	—	—	30.1	NA	20.9	—	—	—	—	—	—	—	—	—	—
0540-95-1027	40-07009	2.5–3.5	QBT3	6.7 (U)	—	—	—	—	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	—	—
0540-95-1029	40-07010	0–0.5	SOIL	5.6 (U)	—	—	—	0.74 (U)	—	—	—	28.3	NA	32.7	—	—	—	—	—	—	—	—	2.32	50.8
0540-95-1031	40-07010	1.65–2.65	QBT3	6.3 (U)	—	269	—	—	2780	—	—	26.6	NA	23.7	—	—	—	—	—	—	—	—	—	—
0540-95-1030	40-07010	3.3–4.3	QBT3	6.6 (U)	—	—	—	—	—	—	—	—	NA	30.6	—	—	—	—	—	—	—	—	—	—

Table 7.5-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Magnesium	Manganese	Mercury	Nickel	Selenium	Silver	Sodium	Thallium	Uranium	Zinc
Qbt 2, 3, 4 Background Value[b]				**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**na**	**11.2**	**1690**	**482**	**0.1**	**6.58**	**0.3**	**1**	**2770**	**1.1**	**2.4**	**63.5**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**2370**	**543**	**0.1**	**9.38**	**0.3**	**1**	**1470**	**0.73**	**2.22**	**60.2**
Soil Background Value[a]				**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**4610**	**671**	**0.1**	**15.4**	**1.52**	**1**	**915**	**0.73**	**1.82**	**48.6**
Construction Worker SSL[c]				**124**	**65.4**	**4350**	**144**	**309**	**na**	**449[c]**	**34.6[e]**	**12,400**	**6190**	**800**	**na**	**483**	**92.9[c]**	**6190**	**1550**	**1550**	**na**	**20.4**	**929**	**92,900**
Industrial SSL[c]				**454**	**17.7**	**224,000**	**2260**	**1120**	**na**	**2920[d]**	**300[f]**	**45,400**	**22,700**	**800**	**na**	**145,000**	**310[f]**	**22,700**	**5680**	**5680**	**na**	**74.9**	**3410**	**341,000**
Residential SSL[c]				**31.3**	**3.9**	**15,600**	**156**	**77.9**	**na**	**219[c]**	**23[f]**	**3130**	**1560**	**400**	**na**	**10,700**	**23[f]**	**1560**	**391**	**391**	**na**	**5.16**	**235**	**23,500**
0540-95-1032	40-07011	0–0.5	SOIL	5.5 (U)	—	—	—	0.73 (U)	—	—	—	50	NA	—	—	—	—	—	—	—	—	—	2.24	—
0540-95-1034	40-07011	1.65–2.65	QBT3	5.5 (U)	—	192	—	—	2410	—	—	15.4	NA	—	—	—	—	—	—	—	—	—	—	—
0540-95-1033	40-07011	3.3–4.3	QBT3	6.8 (U)	—	—	—	—	—	—	—	—	NA	38	—	—	—	—	0.31 (U)	—	—	—	—	—
0540-95-1035	40-07012	0–0.5	SOIL	6.2 (U)	—	—	—	0.82 (U)	—	—	—	15400	NA	44.9	—	—	—	—	—	2 (J)	—	—	5.86	1480
0540-95-1038	40-07012	1.65–2.65	QBT3	6.8 (U)	—	270	—	—	—	—	—	40.9	NA	33	—	—	—	—	0.31 (U)	—	—	—	4.39	—
0540-95-1037	40-07012	3.3–4.3	QBT3	6.5 (U)	—	—	—	—	—	—	—	7.4	NA	—	—	—	—	—	—	—	—	—	—	—
0540-95-1039	40-07013	0–0.5	SOIL	0.88 (J)	—	—	—	0.41 (J)	—	—	—	186	NA	—	—	—	—	—	—	—	—	—	2.1	103
0540-95-1041	40-07013	1.55–2.55	QBT3	0.52 (U)	—	260	—	—	3210	—	—	22.3	NA	—	—	—	—	—	0.51 (J)	—	—	—	—	—
0540-95-1040	40-07013	3.1–4.1	QBT3	0.62 (U)	2.9	—	—	—	—	—	—	—	NA	—	—	—	—	—	1.5	—	—	—	—	—
0540-95-1042	40-07014	0–0.5	SOIL	—	—	—	—	—	—	—	—	255	NA	96.1	—	—	—	—	—	—	—	—	1.92	101
0540-95-1044	40-07014	2.15–3.15	QBT3	0.52 (U)	3.1	342	—	—	3450	—	3.2 (J)	106	NA	28	—	—	—	—	0.4 (U)	—	—	—	—	83.7
0540-95-1043	40-07014	4.3–5.3	QBT3	0.63 (U)	—	—	—	—	—	—	—	9.1	NA	—	—	—	—	—	0.84 (J)	—	—	—	—	—
0540-95-1045	40-07015	0–0.5	SOIL	—	—	—	—	—	—	—	—	58.4	NA	—	—	—	—	—	—	—	—	—	1.91	—
0540-95-1047	40-07015	1.4–2.8	QBT3	0.53 (U)	—	259	—	—	3310	—	—	180	NA	—	—	—	—	—	0.59 (J)	—	—	—	—	—
0540-95-1046	40-07015	2.8–3.8	QBT3	0.6 (U)	—	—	—	—	—	—	—	—	NA	—	—	—	—	—	0.59 (J)	—	—	—	—	—
0540-95-1048	40-07016	0–0.5	SOIL	—	—	321	—	—	—	—	—	30.7	NA	—	—	—	—	—	—	—	—	—	6.06	—
0540-95-1051	40-07016	1.45–2.9	QBT3	0.52 (U)	—	329	—	—	2790	—	—	160	NA	—	—	—	—	—	0.42 (J)	—	—	—	18.1	—
0540-95-1050	40-07016	2.9–3.9	QBT3	0.57 (U)	—	141	—	—	—	—	—	33.6	NA	18.9	—	—	—	—	0.43 (U)	—	—	—	5.64	—
0540-95-1052	40-07017	0–0.5	SOIL	—	—	336	—	—	—	—	—	18.1 (J+)	NA	—	—	—	—	—	—	—	—	—	3.2	—
0540-95-1054	40-07017	0.08–0.29	SOIL	—	—	601	—	0.68	—	—	—	28.6 (J+)	NA	—	—	—	—	—	—	—	—	—	5.5	85.2 (J+)
0540-95-1053	40-07017	0.42–0.58	SOIL	—	—	—	—	0.5 (J)	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	3.8	—
0540-95-1055	40-07018	0–0.5	SOIL	—	—	351	—	—	—	—	—	70 (J+)	NA	—	—	—	—	—	—	—	—	—	3.4	55.5 (J+)
0540-95-1057	40-07018	1–1.5	SOIL	—	—	386	—	—	—	—	—	211 (J+)	NA	22.4	—	—	—	—	—	—	—	—	3	119 (J+)
0540-95-1056	40-07018	1.5–2	SOIL	—	—	—	—	0.64	—	—	—	19.8 (J+)	NA	—	—	—	—	—	—	—	—	—	3.9	50.7 (J+)
0540-95-1058	40-07019	0–0.5	SOIL	—	—	—	—	0.67	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	5	—
0540-95-1060	40-07019	0.92–1.58	SOIL	—	—	—	—	0.49 (J)	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	4.7	—
0540-95-1059	40-07019	3–3.25	SOIL	—	—	—	—	0.47 (J)	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	3.8	—
0540-95-1064	40-07020	0–0.41	SOIL	—	—	—	—	0.54	—	—	—	66.4 (J+)	NA	—	—	—	—	—	—	—	—	—	7.4	67.2 (J+)
0540-95-1061	40-07020	0–0.5	SOIL	—	—	—	—	0.8	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	8.4	52.2 (J+)
0540-95-1063	40-07020	0.42–0.83	QBT3	—	—	92.4	—	—	—	—	—	10.6 (J+)	NA	—	—	—	—	—	—	—	—	—	5.8	—
0540-95-1065	40-07021	0–0.5	SED	—	—	315	—	0.73	—	—	—	26.2 (J+)	NA	26.7	—	—	—	—	—	—	—	—	9.3	—

Table 7.5-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Magnesium	Manganese	Mercury	Nickel	Selenium	Silver	Sodium	Thallium	Uranium	Zinc
Qbt 2, 3, 4 Background Value[a]				**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**na**	**11.2**	**1690**	**482**	**0.1**	**6.58**	**0.3**	**1**	**2770**	**1.1**	**2.4**	**63.5**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**2370**	**543**	**0.1**	**9.38**	**0.3**	**1**	**1470**	**0.73**	**2.22**	**60.2**
Soil Background Value[a]				**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**4610**	**671**	**0.1**	**15.4**	**1.52**	**1**	**915**	**0.73**	**1.82**	**48.8**
Construction Worker SSL[c]				**124**	**65.4**	**4350**	**144**	**309**	**na**	**449[d]**	**34.6[e]**	**12,400**	**6190**	**800**	**na**	**463**	**92.9[c]**	**6190**	**1550**	**1550**	**na**	**20.4**	**929**	**92,900**
Industrial SSL[c]				**454**	**17.7**	**224,000**	**2260**	**1120**	**na**	**2920[d]**	**300[f]**	**45,400**	**22,700**	**800**	**na**	**145,000**	**310[f]**	**22,700**	**5680**	**5680**	**na**	**74.9**	**3410**	**341,000**
Residential SSL[c]				**31.3**	**3.9**	**15,600**	**156**	**77.9**	**na**	**219[d]**	**23[f]**	**3130**	**1560**	**400**	**na**	**10,700**	**23[f]**	**1560**	**391**	**391**	**na**	**5.16**	**235**	**23,600**
0540-95-1067	40-07021	0.83–1.5	SOIL	—	—	—	—	0.55	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	5.5	—
0540-95-1066	40-07021	3–3.67	SOIL	—	—	—	—	0.52	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	5	—
0540-95-1068	40-07022	0–0.5	SOIL	—	—	—	—	0.63	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	5.7	—
0540-95-1070	40-07022	0.83–1.5	SOIL	—	—	—	—	0.59	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	3.8	—
0540-95-1069	40-07022	3–3.67	SOIL	—	—	—	—	0.53	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	4.7	—
0540-95-1071	40-07023	0–0.5	SOIL	—	—	—	—	0.53 (J)	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	4.8	49.2 (J+)
0540-95-1073	40-07023	0.25–1	SOIL	—	—	—	—	0.78	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	4.7	—
0540-95-1072	40-07023	1–1.67	SOIL	—	—	—	—	0.82	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	4.5	—
0540-95-1077	40-07024	0–0.41	SOIL	—	—	—	—	0.63	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	5.7	—
0540-95-1074	40-07024	0–0.5	SOIL	—	—	—	—	0.66	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	6.7	—
0540-95-1076	40-07024	0.42–0.83	SOIL	—	—	—	—	—	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	5.2	—
0540-95-1078	40-07025	0–0.5	SED	5.94 (U)	—	—	—	0.594 (U)	—	—	—	—	NA	—	—	—	—	—	0.302 (U)	—	—	—	3.42	—
0540-95-1080	40-07025	1–1.5	SOIL	5.09 (U)	—	—	—	0.509 (U)	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	2.37	—
0540-95-1079	40-07025	1.5–1.92	SOIL	5.09 (U)	—	—	—	0.509 (U)	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	2.11	—
0540-95-1081	40-07026	0–0.5	SED	6.93 (U)	—	—	—	0.693 (U)	—	—	—	15.3 (J-)	NA	—	—	—	—	13	0.345 (U)	1.66	—	—	—	—
0540-95-1083	40-07026	0.58–1.17	SED	6.72 (U)	—	—	—	0.672 (U)	—	—	—	—	NA	—	—	—	—	11.6	0.343 (U)	1.8	—	—	2.51	—
0540-95-1082	40-07026	1.17–1.67	SED	6.9 (U)	—	—	—	0.69 (U)	—	—	—	—	NA	—	—	—	—	9.83	0.346 (U)	—	—	—	2.39	—
0540-95-1084	40-07027	0–0.5	SED	6.86 (U)	—	—	—	1.86	—	—	—	27.2 (J-)	NA	—	—	—	0.11 (J)	33	0.335 (U)	5.37	—	—	3.73	—
0540-95-1086	40-07027	0.25–0.67	SOIL	5.23 (U)	—	—	—	0.921	—	—	—	—	NA	—	—	—	—	21.4	—	1.45	—	—	2.15	—
0540-95-1085	40-07027	0.67–1.08	SOIL	5.04 (U)	—	—	—	0.504 (U)	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	2.34	—
0540-95-1087	40-07028	0–0.5	SED	6.12 (U)	—	—	—	0.612 (U)	—	—	—	—	NA	—	—	—	—	10.2	0.306 (U)	1.24	—	—	2.56	—
0540-95-1090	40-07028	0.33–0.83	SOIL	5.88 (U)	—	—	—	1.02	—	—	—	15.7 (J-)	NA	—	—	—	—	18.6	—	2.36	—	—	2.49	—
0540-95-1089	40-07028	0.83–1.67	SOIL	6.25 (U)	—	—	—	0.638	—	—	—	17.5 (J-)	NA	—	—	—	—	18.6	—	1.16	—	—	2.83	—
0540-95-1091	40-07029	0–0.5	SOIL	6.13 (U)	—	—	—	1.67	—	20.4	10.1	16.9 (J-)	NA	—	—	726	—	35.8	—	2.33	—	—	2.68	—
0540-95-1093	40-07029	0.25–0.58	SOIL	6.72 (U)	—	—	—	2.55	—	—	—	17.6 (J-)	NA	—	—	—	—	46	—	4.84	—	—	2.82	—
0540-95-1092	40-07029	0.58–1.17	SOIL	6.06 (U)	—	—	—	0.93	—	—	—	—	NA	—	—	—	—	22.2	—	1.84	—	—	3.65	—
0540-95-1094	40-07030	0–0.5	SED	6.07 (U)	—	—	—	0.719	—	—	—	19.5 (J-)	NA	—	—	—	—	17.6	0.309 (U)	1.99	—	—	2.66	—
0540-95-1096	40-07030	0.25–0.75	SOIL	6.4 (U)	—	—	—	0.804	—	—	—	35.7 (J-)	NA	—	—	—	—	19.2	—	2.48	—	—	2.68	63.2
0540-95-1095	40-07030	0.75–1.33	SOIL	7.66 (U)	—	—	—	1.63	—	—	—	52 (J-)	NA	—	—	—	0.116 (J)	31.1	—	3.3	—	—	1.98	60.6
0540-95-1097	40-07031	0–0.5	SED	5.74 (U)	—	—	—	0.589	—	—	—	46.9 (J-)	NA	—	—	—	—	11.2	—	1.39	—	—	2.56	—
0540-95-1099	40-07031	1.13–1.75	SOIL	6.71 (U)	—	—	—	1	—	—	—	35.2 (J-)	NA	—	—	—	—	18.1	—	2.38	—	—	2.98	—

Table 7.5-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Magnesium	Manganese	Mercury	Nickel	Selenium	Silver	Sodium	Thallium	Uranium	Zinc
Qbt 2, 3, 4 Background Value[a]				**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**na**	**11.2**	**1690**	**482**	**0.1**	**6.56**	**0.3**	**1**	**2770**	**1.1**	**2.4**	**63.5**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**2370**	**543**	**0.1**	**9.36**	**0.3**	**1**	**1470**	**0.73**	**2.22**	**60.2**
Soil Background Value[a]				**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**4610**	**671**	**0.1**	**15.4**	**1.52**	**1**	**915**	**0.73**	**1.82**	**48.8**
Construction Worker SSL[c]				**124**	**65.4**	**4350**	**144**	**309**	**na**	**449[d]**	**34.6[e]**	**12,400**	**6190**	**800**	**na**	**463**	**92.9[e]**	**6190**	**1550**	**1550**	**na**	**20.4**	**929**	**92,900**
Industrial SSL[c]				**454**	**17.7**	**224,000**	**2260**	**1120**	**na**	**2920[d]**	**300[f]**	**45,400**	**22,700**	**800**	**na**	**145,000**	**310[f]**	**22,700**	**5680**	**5680**	**na**	**74.9**	**3410**	**341,000**
Residential SSL[c]				**31.3**	**3.9**	**15,600**	**156**	**77.9**	**na**	**219[d]**	**23[f]**	**3130**	**1560**	**400**	**na**	**10,700**	**23[f]**	**1560**	**391**	**391**	**na**	**5.16**	**235**	**23,500**
0540-95-1098	40-07031	1.75–2.25	SOIL	7.12 (U)	—	—	—	1.63	—	—	—	37.9 (J-)	NA	—	—	—	—	24.2	—	2.2	—	—	2.62	51.5
0540-95-1100	40-07032	0–0.5	SED	5.7 (U)	—	137	—	0.57 (U)	—	—	6.53	—	NA	—	—	742	—	11.1	—	1.39	—	—	3.1	—
0540-95-1103	40-07032	0.25–0.67	SOIL	6.31 (U)	—	—	—	0.916	—	—	—	19.8 (J-)	NA	—	—	—	—	21	—	2.19	—	—	2.3	—
0540-95-1102	40-07032	0.67–1.17	SOIL	6.56 (U)	—	—	—	0.744	—	—	—	15.4 (J-)	NA	—	—	—	—	15.5	—	2.47	—	—	1.94	—
0540-95-1104	40-07033	1.83–2.5	SOIL	6.7 (U)	—	—	—	0.71 (U)	—	—	—	—	0.68 (U)	—	—	—	—	—	—	1.2 (J)	—	—	2.21	—
0540-95-1105	40-07034	0.17–1	SED	6.4 (U)	—	—	—	0.68 (U)	—	—	—	—	—	—	—	—	—	—	—	1.7 (J)	—	—	2.64	—
0540-95-1106	40-07035	0.17–0.83	SED	6.9 (U)	—	—	—	0.74 (U)	—	—	—	—	—	—	—	—	—	11.7	0.31 (U)	—	—	—	2.62	—
0540-95-1107	40-07036	0.33–0.83	SED	6.5 (U)	—	—	—	0.69 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.33	—
0540-95-1109	40-07037	0.17–1	SED	7.4 (U)	—	—	—	0.91 (J)	—	—	—	14.4	—	—	—	—	—	16	0.33 (U)	2.9	—	—	2.45	—
0540-95-1110	40-07038	1.33–2	SED	6.6 (U)	—	—	—	0.7 (U)	—	—	—	—	—	—	—	—	—	10.7	—	—	—	—	—	—
0540-95-1111	40-07039	0.17–0.83	SED	6.8 (U)	—	—	—	0.73 (U)	—	—	—	—	—	—	—	—	—	—	0.38 (U)	1.8 (J)	—	—	2.24	—
0540-95-1112	40-07040	1–2	SED	6.3 (U)	—	—	—	0.67 (U)	—	—	—	161	—	—	—	—	—	—	—	—	—	—	2.68	—
0540-95-1113	40-07041	0–0.5	SOIL	—	—	—	—	—	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	3.55	—
0540-95-1115	40-07042	0–0.5	SOIL	—	—	—	—	—	9070	—	—	16.4 (U)	NA	31.9	—	1260 (J+)	—	—	2	—	—	—	4.47	—
0540-95-1116	40-07043	0–0.5	SOIL	—	—	—	—	—	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	5.77	—
0540-95-1117	40-07044	0–0.5	SOIL	—	—	—	—	—	6910	—	—	—	NA	23.4	—	924 (J+)	—	—	1.7	—	—	—	3.48	—
0540-95-1118	40-07045	0–0.5	SOIL	—	—	—	—	—	—	—	—	—	NA	27.2	—	745 (J+)	—	—	—	—	—	—	9.1	—
0540-95-1119	40-07046	0–0.5	SOIL	—	—	—	—	—	—	—	—	—	NA	—	—	697 (J+)	—	—	—	—	—	—	3.38	—
0540-95-1120	40-07047	0–0.5	SOIL	—	—	—	—	—	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	2.76	—
0540-95-1121	40-07048	0–0.5	SOIL	—	—	—	—	—	—	—	—	—	NA	—	—	—	—	—	—	—	—	—	3.83	—

Notes: Results are in mg/kg. Data qualifiers are in Appendix A.

[a] BVs are from LANL 1998, 059730.

[b] na = Not available.

[c] SSLs are from NMED 2009, 108070, unless otherwise noted.

[d] SSLs are for hexavalent chromium.

[e] Construction worker SSLs calculated using toxicity value from EPA regional screening tables (http://www.epa.gov/earth1r6/6pd/rcra_c/pd-n/screen.htm) and equation and parameters from NMED (2009, 108070).

[f] SSLs are from EPA regional screening tables (http://www.epa.gov/earth1r6/6pd/rcra_c/pd-n/screen.htm).

[g] — = Not detected or not above BV.

[h] NA = Not analyzed.

SAMPLE DATE	SURVEY ID	IH LAST NAME	COMMENTS	LOCATION	LOC 2	LOC 3	LOCATION DESCRIPTION	AGENT	:ENTERED RESULT	LT_RESULT	RESULT NUMBER	UNIT
8/15/2000	200001584	ALBAUGH	Creat By: Z094457; Creat Dt: 29-MAY-03; Mod By: Z094457; Mod Dt: 29-MAY-03; Map:	TA40	15		Cannot determine whether sample is in Be area. Item swiped is fixed. Cannot determine whether swipe is a regular, quarterly sample. Swipe was taken below 8 ft. Cannot determine whether sample was taken post-decontamination.; Room(DV): BUNKER; Swipe Area: 100; Swipe UOM: cm2; FMU: 67; Loc: ON FLOOR A	BERYLLIUM	: .03		0.03	UG/100CM2
8/15/2000	200001584	ALBAUGH	Creat By: Z094457; Creat Dt: 29-MAY-03; Mod By: Z094457; Mod Dt: 29-MAY-03; Map:	TA40	15		Cannot determine whether sample is in Be area. Cannot determine whether item swiped was portable or fixed. Cannot determine whether swipe is a regular, quarterly sample. Cannot determine height at which swipe was taken. Cannot determine whether sample was; Room(DV): BUNKER; Swipe Area: 100; Swipe UO	BERYLLIUM	: <.03	<	0.03	UG/100CM2
8/15/2000	200001584	ALBAUGH	Creat By: Z094457; Creat Dt: 29-MAY-03; Mod By: Z094457; Mod Dt: 29-MAY-03; Map:	TA40	15		Cannot determine whether sample is in Be area. Item swiped is portable. Cannot determine whether swipe is a regular, quarterly sample. Swipe was taken below 8 ft. Cannot determine whether sample was taken post-decontamination.; Room(DV): BUNKER; Swipe Area: 100; Swipe UOM: cm2; FMU: 67; Loc: TABLE C	BERYLLIUM	: .04		0.04	UG/100CM2

8/15/2000	200001584	ALBAUGH	Creat By: Z094457; Creat Dt: 29-MAY-03; Mod By: Z094457; Mod Dt: 29-MAY-03; Map:	TA40	15	Cannot determine whether sample is in Be area. Item swiped is fixed. Cannot determine whether swipe is a regular, quarterly sample. Cannot determine height at which swipe was taken. Cannot determine whether sample was taken post-decontamination.; Room(DV): BUNKER; Swipe Area: 100; Swipe UOM: cm2; FM	BERYLLIUM	: <.03	<	0.03	UG/100CM2
8/15/2000	200001584	ALBAUGH	Creat By: Z094457; Creat Dt: 29-MAY-03; Mod By: Z094457; Mod Dt: 29-MAY-03; Map:	TA40	15	Cannot determine whether sample is in Be area. Item swiped is fixed. Cannot determine whether swipe is a regular, quarterly sample. Cannot determine height at which swipe was taken. Cannot determine whether sample was taken post-decontamination.; Room(DV): BUNKER; Swipe Area: 100; Swipe UOM: cm2; FM	BERYLLIUM	: <.03	<	0.03	UG/100CM2
8/9/2002	2002-02644	WINKEL	BE Area: False; Reason: Baseline Inventory; Pre Decon: False; Post Decon: False; Item: Facility Equipment; Pavement Only: False	TA40	15	Front room: top of HUE-1 breaker panel	BERYLLIUM	: < 0.03	<	0.03	UG/100CM2
8/9/2002	2002-02644	WINKEL	BE Area: False; Reason: Baseline Inventory; Pre Decon: False; Post Decon: False; Item: Facility Equipment; Pavement Only: False	TA40	15	Front room: top of PP/A breaker panel	BERYLLIUM	: < 0.03	<	0.03	UG/100CM2
8/9/2002	2002-02644	WINKEL	BE Area: False; Reason: Baseline Inventory; Pre Decon: False; Post Decon: False; Item: Facility Equipment; Pavement Only: False	TA40	15	Front room: top of PP/A ckt breaker panel	BERYLLIUM	: < 0.03	<	0.03	UG/100CM2
8/9/2002	2002-02644	WINKEL	BE Area: False; Reason: Baseline Inventory; Pre Decon: False; Post Decon: False; Item: Structure; Pavement Only: False	TA40	15	Back room: inside port in west wall	BERYLLIUM	: < 0.03	<	0.03	UG/100CM2

8/9/2002	2002-02644	WINKEL	BE Area: False; Reason: Baseline Inventory; Pre Decon: False; Post Decon: False; Item: Structure;	TA40	15	Firing site: steel floor	BERYLLIUM	: < 0.03	<	0.03	UG/100CM2
8/9/2002	2002-02644	WINKEL	BE Area: False; Reason: Baseline Inventory; Pre Decon: False; Post Decon: False; Item: Facility Equipment; Pavement	TA40	15	Firing site: shelf behind gas cylinders	BERYLLIUM	: < 0.03	<	0.03	UG/100CM2
8/9/2002	2002-02644	WINKEL	BE Area: False; Reason: Baseline Inventory; Pre Decon: False; Post Decon: False; Item: Structure; Pavement Only: False	TA40	15	Firing site: inside port through east steel wall	BERYLLIUM	: < 0.03	<	0.03	UG/100CM2
8/9/2002	2002-02644	WINKEL	BE Area: False; Reason: Baseline Inventory; Pre Decon: False; Post Decon: False; Item: Structure; Pavement Only: False	TA40	15	Firing site: inside port through west steel wall	BERYLLIUM	: < 0.03	<	0.03	UG/100CM2
8/9/2002	2002-02644	WINKEL	BE Area: False; Reason: Baseline Inventory; Pre Decon: False; Post Decon: False; Item: Facility Equipment; Pavement	TA40	15	Back room: louvers of vent in east wall	BERYLLIUM	: < 0.03	<	0.03	UG/100CM2
8/9/2002	2002-02644	WINKEL	BE Area: False; Reason: Baseline Inventory; Pre Decon: False; Post Decon: False; Item: Structure; Pavement Only: False	TA40	15	Back room: inside port on south wall	BERYLLIUM	: < 0.03	<	0.03	UG/100CM2
8/30/2005	200501240	ROMERO		TA40		TA-40-5 - Beryllium mirror housing	BERYLLIUM	: 0.04		0.04	UG/100CM2
8/30/2005	200501240	ROMERO		TA40		TA-40-15 - Beryllium mirror housing	BERYLLIUM	: ND			UG/100CM2
8/30/2005	200501240	ROMERO		TA40		TA-40-15 - beneath mirror housing	BERYLLIUM	: 0.02		0.02	UG/100CM2

8/30/2005	200501240	ROMERO		TA40	TA-40-5 - near Beryllium mirror in camera	BERYLLIUM	: 0.09		0.09	UG/100CM2
8/30/2005	200501240	ROMERO		TA40	TA-40-5 - beneath mirror housing	BERYLLIUM	: ND			UG/100CM2
8/30/2005	200501240	ROMERO		TA40	TA-40-15 - near Beryllium mirror in camera	BERYLLIUM	: 0.13		0.13	UG/100CM2
3/11/2009	200904607	BEMENT	building 5 room pad. Blast pad - indoor	TA40		BERYLLIUM	: <0.025	<	0.025	UG/100CM2
3/11/2009	200904607	BEMENT	Building 5 pad. Blast area - laser area	TA40		BERYLLIUM	: <0.025	<	0.025	UG/100CM2
3/11/2009	200904607	BEMENT	Back area 10 feet behind blast area	TA40		BERYLLIUM	: <0.025	<	0.025	UG/100CM2
3/11/2009	200904607	BEMENT	building 14 room 1. prep table - leveling machine	TA40		BERYLLIUM	: <0.025	<	0.025	UG/100CM2
3/11/2009	200904607	BEMENT	building 14 room 1. Work bench in back of room	TA40		BERYLLIUM	: <0.025	<	0.025	UG/100CM2
3/11/2009	200904607	BEMENT	Building 15 pad. Center of pad- inside awning	TA40		BERYLLIUM	: <0.025	<	0.025	UG/100CM2
3/11/2009	200904607	BEMENT	Building 15 pad. Center of port glass - top	TA40		BERYLLIUM	: <0.025	<	0.025	UG/100CM2
3/11/2009	200904607	BEMENT	building 15 pad. back firing wall 6 feet from ground	TA40		BERYLLIUM	: <0.025	<	0.025	UG/100CM2
3/11/2009	200904607	BEMENT	bulding 15 room 2. Rotating mirror camera. Mirrow inside is beryllium	TA40		BERYLLIUM	: <0.025	<	0.025	UG/100CM2
3/11/2009	200904607	BEMENT	building 5 rrom 2. rotating mirror camera - internal base. Equipment contains beryllium coated	TA40		BERYLLIUM	: <0.025	<	0.025	UG/100CM2
3/11/2009	200904607	BEMENT	Building 15 rrom 2. Rotating mirror camera. internal base. Beryllium	TA40		BERYLLIUM	: <0.025	<	0.025	UG/100CM2

3/11/2009	200904607	BEMENT	building 5 pad. blast area back wall 6 feet from	TA40				BERYLLIUM	: <0.025	<	0.025	UG/100C M2
11/13/2014	201409190	HOPWOOD		TA40	15	CHAMBER 15 FIRING POINT		BERYLLIUM	: (0.0032)			UG/100C M2
11/13/2014	201409190	HOPWOOD		TA40	15	CHAMBER 15 FIRING POINT	Beryllium and lead sample vessel portal opening	BERYLLIUM	: <0.011	<	0.011	UG/100C M2
11/13/2014	201409190	HOPWOOD		TA40	15	CHAMBER 15 FIRING POINT	Beryllium and lead sample of interior vessel wall	BERYLLIUM	: <0.021	<	0.021	UG/100C M2
11/13/2014	201409190	HOPWOOD		TA40	15	CHAMBER 15 FIRING POINT	Beryllium and lead sample of interior vessel wall	BERYLLIUM	: <0.0054	<	0.0054	UG/100C M2
11/13/2014	201409190	HOPWOOD		TA40	15	CHAMBER 15 FIRING POINT	Beryllium and lead sample of interior vessel wall	BERYLLIUM	: <0.026	<	0.026	UG/100C M2
11/10/2015	201509674	GARCIA		TA40	15		CAT 950m left side of Bucket	BERYLLIUM	: .012		0.012	UG/100C M2
11/10/2015	201509674	GARCIA		TA40	15		CAT 950m Right side of Bucket	BERYLLIUM	: .013		0.013	UG/100C M2
11/10/2015	201509674	GARCIA		TA40	15		CAT 950m left front tire	BERYLLIUM	: .016		0.016	UG/100C M2

11/10/2015	201509674	GARCIA	TA40	15	CAT 950m right rear tire	BERYLLIUM	: 0.0092		0.0092	UG/100C M2	
11/10/2015	201509674	GARCIA	TA40	15	Floor inside Cab	BERYLLIUM	: 0.053		0.053	UG/100C M2	
11/10/2015	201509674	GARCIA	TA40	15	CAT track hoe (excavator) 330B Bucket	BERYLLIUM	: <0.0038	<	0.0038	UG/100C M2	
11/10/2015	201509674	GARCIA	TA40	15	CAT track hoe (excavator) 330B Floor inside cab	BERYLLIUM	: 0.092		0.092	UG/100C M2	